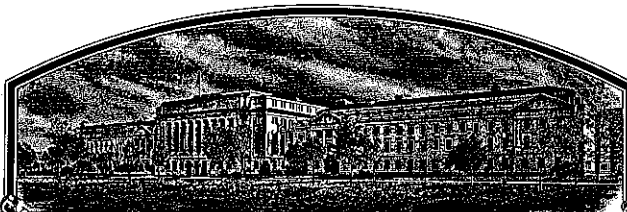


No.

9500071



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Sunderman Breeding Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS PROVIDED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BARLEY

'Sunstar Prince'

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 29th day of December in
the year of our Lord one thousand nine
hundred and ninety-five.

Attest:

Marsha A. Stanton
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

James H. Listman
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Sunderman Breeding Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. SDM 306B	3. VARIETY NAME Sunstar Prince
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 3754 North 2700 East Twin Falls ID 83301		5. PHONE (include area code) 208 733 0902	FOR OFFICIAL USE ONLY PVPO NUMBER 9500071 Filing and Examination Fee: \$ 2325.00 Date: Jan. 3, 1995 Certificate Fee: \$ 300.00 Date: DECEMBER 7, 1995
6. GENUS AND SPECIES NAME Hordeum vulgare L.	7. FAMILY NAME (Botanical) Gramineae		
8. CROP KIND NAME (Common Name) Six row Spring barley	9. DATE OF DETERMINATION June 1990		Filing and Examination Fee: \$ 2325.00 Date: Jan. 3, 1995 Certificate Fee: \$ 300.00 Date: DECEMBER 7, 1995
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Chapter S corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Idaho		12. DATE OF INCORPORATION June 25, 1991	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

**Donald Sunderman
3754 N 2700 E
Twin Falls ID 83301**

208 733 0902

PHONE (include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☐ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office **12/26/94**

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☒ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____) ☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates) ☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] Donald Sunderman	CAPACITY OR TITLE President	DATE 12/20/94
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

14 Exhibit A Origin and breeding history of the variety

Sunstar Prince was selected from a cross of Steptoe with Eight-twelve made in the spring of 1987. The F₁ generation was grown in 1987-88 winter greenhouse and the F₂, F₃ and F₄ generations in the field from 1988-90. Sunstar Prince originated from the bulk of an F₄ line. It has been tested in yield trials from 1991 through 1994.

Sunstar Prince shown stability for all phenotypic characters for the years 1992 through 1995 and has shown no indication of mutation or segregation.

14 Exhibit B Novelty Statement

Sunstar Prince and Steptoe are most similar varieties. Kernel characteristics of the two varieties are different and consistent and can be used to differentiate the varieties.

Kernel differences between Steptoe and Sunstar Prince are as follows:

<u>Variety</u>	<u>Basal Mark</u>	<u>Glume Hair</u>	<u>Hull</u>	<u>Rachilla Hairs</u>
Steptoe	Crease	Covered Long	Smooth	Long
Sunstar Prince	Depression	Covered Short	Slightly Wrinkled	Short

Between one and two percent of the kernels of Sunstar Prince have blue aleurone. Steptoe has no kernels with blue aleurone.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Barley)

OBJECTIVE DESCRIPTION OF VARIETY
BARLEY (HORDEUM VULGARE)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Sunderman Breeding Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

3754 North 2700 East
Twin Falls ID 83301

FOR OFFICIAL USE ONLY

PVPO NUMBER

9500071

VARIETY NAME OR TEMPORARY
DESIGNATION
Sunstar Prince

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (i.e. or) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

1 - SPRING 2 - FACULTATIVE WINTER 3 - WINTER Early Growth: 1 - PROSTRATE 2 - SEMIPROSTRATE
3 - ERECT

2. MATURITY (50% Flowering):

1 - EARLY (California Mariout) 2 - MIDSEASON (Betzes) 3 - LATE (Frontier)

No. of days Earlier than } 1 - BETZES 2 - CALIFORNIA MARIOUT 3 - CONQUEST 4 - DICKSON
 No. of days EARLIER later than } 5 - PIROLINE 6 - PRIMUS 7 - UNITAN 8 - Steptoe 9 - WPB 501

3. PLANT HEIGHT (From soil level to top of head):

1 - SEMIDWARF 2 - SHORT (California Mariout) 3 - MEDIUM TALL (Betzes) 4 - TALL (Conquest)

Cm. Shorter than } 1 - BETZES 2 - CALIFORNIA MARIOUT 3 - CONQUEST 4 - DICKSON
 Cm. Taller than } 5 - PIROLINE 6 - PRIMUS 7 - UNITAN 8 - Steptoe 9 - WPB 501

4. STEM:

Exertion (Flag to spike at maturity): 1 - 0 - 3 cm. 2 - 3 - 10 cm. Anthocyanin: 1 - ABSENT 2 - PRESENT
3 - 10 - 15 cm.

NO. OF NODES (Originating from node above ground)

Collar Shape: 1 - CLOSED 2 - V-SHAPED 3 - OPEN Shape of Neck: 1 - STRAIGHT 2 - SNAKY
4 - MODIFIED CLOSED OR OPEN 3 - OTHER (Specify)

5. LEAF:

Basal leaf sheath (seedling): 1 - GLABROUS 2 - PUBESCENT Position of flag leaf (at boot stage): 1 - DROOPING
2 - UPRIGHT

Waxiness: 1 - ABSENT (Glossy) 2 - SLIGHTLY WAXY MM. WIDTH (First leaf below flag leaf)
3 - WAXY

CM. LENGTH (First leaf below flag leaf) Anthocyanin in leaf sheath: 1 - ABSENT 2 - PRESENT

6. HEAD:

Type: 1 - TWO-ROWED 2 - SIX-ROWED Density: 1 - LAX 2 - ERECT (Not dense)
3 - ERECT (Dense)

Shape: 1 - TAPERING 2 - STRAP 3 - CLAVATE Waxiness: 1 - ABSENT (Glossy) 2 - SLIGHTLY WAXY
4 - OTHER (Specify) 3 - WAXY

Lateral Kernels Overlap: 1 - NONE 2 - AT TIP Rachis (Hair on edge): 1 - LACKING 2 - FEW 3 - COVERED
3 - 1/4 - 1/2 OF HEAD

7. GLUME:

Length: 1 - 1/3 OF LEMMA 2 - 1/2 OF LEMMA Hairs: 1 - NONE 2 - SHORT 3 - LONG
3 - MORE THAN 1/2 OF LEMMA

Hair covering: 1 - NONE 2 - RESTRICTED TO MIDDLE 3 - CONFINED TO BAND 4 - COMPLETELY COVERED

Awns: 1 - LESS THAN EQUAL TO LENGTH OF GLUMES 2 - EQUAL TO LENGTH OF GLUMES
3 - MORE THAN EQUAL TO LENGTH OF GLUMES

Awn Surface: 1 - SMOOTH 2 - SEMISMOOTH 3 - ROUGH

8. LEMMA:

☐ 5 Awn: 1 = AWNLESS 2 = AWNLETS ON CENTRAL ROWS, AWNLESS ON LATERAL ROWS
 3 = SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 = SHORT (less than equal to length of spike)
 5 = LONG (longer than spike) 6 = HOODED

☐ 3 Awn Surface: 1 = AWNLESS 2 = SMOOTH 3 = SEMISMOOTH 4 = ROUGH

☐ 2 Teeth: 1 = ABSENT 2 = FEW 3 = NUMEROUS

☐ 1 Hair: 1 = ABSENT 2 = PRESENT

☐ 1 Shape of base: 1 = DEPRESSION 2 = SLIGHT CREASE
 3 = TRANSVERSE CREASE

☐ 2 Rachilla Hairs: 1 = SHORT 2 = LONG

9. STIGMA:

☐ 1 Hairs: 1 = FEW 2 = MANY

10. SEED:

☐ 2 Type: 1 = NAKED 2 = COVERED

☐ 1 Hairs on Ventral Furrow: 1 = ABSENT 2 = PRESENT

☐ 4 Length: 1 = SHORT (8.0 mm.) 2 = SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 = MIDLONG (8.5 - 9.5 mm.)
 4 = MIDLONG TO LONG (9.0 - 10.5 mm.) 5 = LONG (10.0 mm.)

☐ 2 Wrinkling of hull: 1 = NAKED 2 = SLIGHTLY WRINKLED 3 = SEMIWRINKLED 4 = WRINKLED

☐ 1 Aleurone Color: 1 = COLORLESS (White or Yellow) 2 = BLUE with 2 percent Blue

☐ 0 ☐ 3 PERCENT ABORTIVE

☐ 4 ☐ 8 GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> SEPTORIA	<input type="checkbox"/> NET BLOTCH	<input type="checkbox"/> SPOT BLOTCH	<input type="checkbox"/> POWDERY MILDEW
<input type="checkbox"/> LOOSE SMUT	<input type="checkbox"/> BACTERIAL BLIGHT	<input type="checkbox"/> COVERED SMUT	<input type="checkbox"/> FALSE LOOSE SMUT
<input type="checkbox"/> STEM RUST	<input type="checkbox"/> LEAF RUST	<input type="checkbox"/> SCAB	<input type="checkbox"/> SCALD
<input type="checkbox"/> AY	<input type="checkbox"/> BSMV	<input type="checkbox"/> BYDV	<input type="checkbox"/> OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

<input type="checkbox"/> GREEN BUG	<input type="checkbox"/> ENGLISH GRAIN APHID	<input type="checkbox"/> CHINCH BUG	<input type="checkbox"/> ARMYWORM
<input type="checkbox"/> GRASS HOPPERS	<input type="checkbox"/> CEREAL LEAF BEETLE	<input type="checkbox"/> OTHER (Specify)	
HESSIAN FLY RACES	<input type="checkbox"/> GP	<input type="checkbox"/> A	<input type="checkbox"/> B
	<input type="checkbox"/> D	<input type="checkbox"/> E	<input type="checkbox"/> F
			<input type="checkbox"/> C
			<input type="checkbox"/> G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 DDT ☐ 0 OTHER (Specify)

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Steptoe	Seed size	Steptoe
Leaf size		Coleoptile elongation	
Leaf color	"	Seedling pigmentation	
Leaf carriage	"		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

- Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
- Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture. pp. 61 - 84.
- Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

14 Exhibit C Objective description of the variety

Sunstar Prince (SDM 306B) is a high yielding 6-row feed barley derived from the cross of Steptoe/Eight-twelve made in 1987.

The variety has averaged 3 inches shorter than Steptoe and Colter when grown under irrigation. Straw strength of Sunstar Prince and Colter are similar and slightly stronger than Steptoe. Maturity of the 3 varieties is similar. In the 9-station average of yields of the 3 varieties grown in 1 or more trials during 1992-94, Sunstar Prince has outyielded Steptoe and Colter by 6 and 8 bushels per acre, respectively. Test weights of Sunstar Prince and Colter are similar and 1 pound per bushel higher than Steptoe. Percent plump kernels over a 6/64 screen is 93, 94.7 and 87.7 for Sunstar Prince, Steptoe and Colter, respectively.

14 E Statement of basis of ownership

The variety, Sunstar Prince, for which plant variety protection is hereby sought was selected from progeny of a cross Steptoe/ Eight-twelve, made by Donald Sunderman in 1987. Development and testing was carried out by him or under his supervision. All rights to the variety are assigned to Sunderman Breeding Inc.



United States
Department of
Agriculture

Agricultural
Research
Service

Pacific West Area
Wheat Genetics, Quality
Physiology and Disease
Research Unit

9500071
209 Johnson Hall, WSU
Pullman, WA 99164-6420
(509) 335-6197
(509) 335-2872 (fax)
jones@wsuvm1.csc.wsu.edu

December 12, 1994

Dr. Donald Sunderman

Dear Don:

Enclosed are the pictures. Sorry I haven't been able to rerun them yet our protein person has been sick. We are redoing them this week though and send better pictures when we get them.

SUNSTAR
PROMISE 80M406: Unique at 1B locus, has bands 7+8.

SDM 208B: Unique prolamin bands (about 3/4 of the way down
SUNSTAR DOUBLE the gel). Heterogeneous but not for the prolamins.

SDM 306B: Very similar to Steptoe. No differences? Can't
SUNSTAR PRINCE tell much from the gel but does not appear to be any unique bands when compared to Steptoe.

Hope this gets to you in time. Sorry about the delay. Call if you have questions. I'll let you know when the new pictures come if we see anything new on SDM 306B.


Steve

8

VARIETIES OR SELECTIONS TESTED USING ELECTROPHORESIS

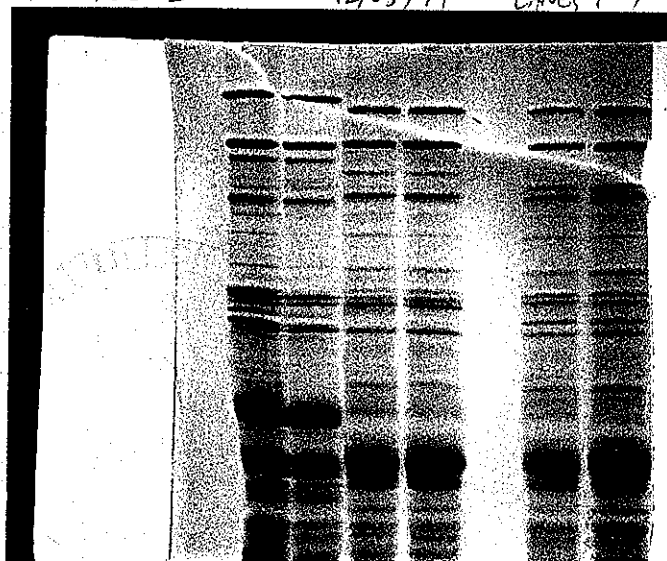
LANE

1	CENTENNIAL	
2	"	
3	SDM 406	Sunstar Premier
4	"	
5	BLANK	
6	PENAWAWA	
7	"	
8	STEPTOE	
9	"	
10	SDM 203 B	Sunstar Double
11	"	
12	SDM 306 B	Sunstar Prince
13	"	
14	WESENBERG'S RELEASE	Eight-Twelve
15	"	
16	CHINESE SPRING	

GEL #2

12/05/94

LANES 1-7



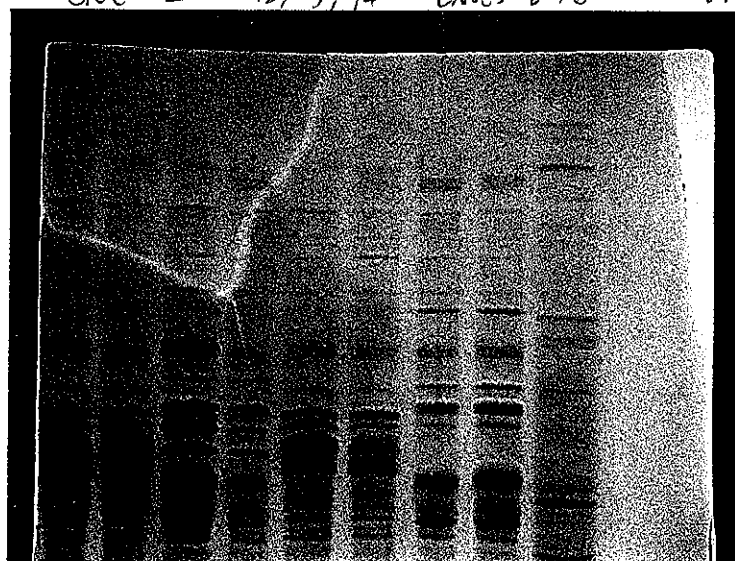
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GEL #2

12/05/94

LANES 8-16

V.C



8 9 10 11 12 13 14 15 16

Summary of agronomic data obtained on varieties grown under irrigation at :

Year	1993				1994	We
	Aber- deen	Aber- deen	Twin Falls	Tet- Rupert	Kim- berly	Aber- deen
Variety						
Sunstar Prince*	176.8	171.7	162.6	163.6	113.8	172.1 100.1 115.5 168.
Steptoe	176.5	169.5	121.9	158.3	127.6	161.4 94.9 118.5 158.
Colter	162.8	175.6	135.8	164.1	103.3	167.0 101.7 116.3 147.
Sprinter	138.0	171.4		136.9		147.1 78.0 101.9 127.
Gustoe	146.4	177.3		147.4		
Medallion	144.5	185.7				
WPB 501				163.3		145.8 90.5 97.3

*Sunstar Prince was originally SDM 306B

Variety	Height inches							
	1992				1994			
	Aber	Aber	Twin	Rupert	Kim- Aber	Ririe	Aber	8-Sta Average.
Sunstar Prince	30	36	34	36	41	32	33	32 34
Steptoe	35	39	37	37	43	34	36	34 37
Colter	32	42	38	39	42	33	38	35 37
Sprinter	30	42		40	42	31	33	32
Gustoe	24	29		32				
WPB 501					34	24	27	